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(71)Applicant : OKI ELECTRIC IND CO LTD

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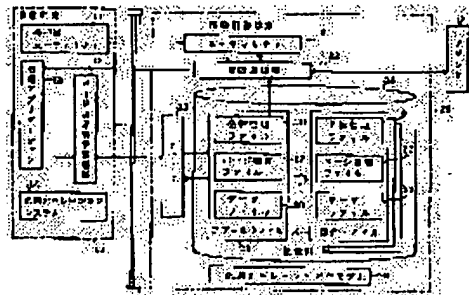
(72)Inventor : UENO MAKOTO

(54) METHOD AND SYSTEM FOR PRINT CONTROL

(57)Abstract

PURPOSE: To facilitate a process when a print request is made again after a print control terminal ends requested printing operation.

CONSTITUTION: When data for printing are received by the print control terminal 20, a spooler 23 retrieves a form feed position. Print data are stored in the data file 28 of a spool file 25 and page information showing a print start position of each page is stored in a page management file 27. A print processing part 22 while referring to the spool file 25 controls a printer 3 to perform the printing operation. The contents of the spool file 25 are transferred to and stored in a storage file 30 even after the printing operation ends. When a reprinting request specifying a page is made, a page management file 32 is referred to and the corresponding print data are read out of a data file 33. Therefore, print data of the corresponding page need not be resent from a requesting terminal 10.



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CLAIMS

[Claim(s)]

[Claim 1] When a printing control terminal performs printing processing using the data for printing received from the request terminal When there is a re-printing demand which extracted the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, saved the aforementioned page information with the data for the aforementioned printing after the printing processing end, and specified the page, The printing control method characterized by printing the page to which the saved data correspond with reference to the aforementioned page information.

[Claim 2] The printing control system characterized by providing the following. The spool file which stores the received data for printing in the printing control terminal which receives a printing request The spooler which generates the page information which searches a newpage position from the aforementioned data for printing, and shows the printing starting position of each page The permanent file which saves the data and the page information for the aforementioned printing after a printing processing end The printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing

[Claim 3] It is the printing control system which carries out [having had the printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing, after the spool file held the data and the page information for printing as it was in the claim 2 when printing was completed, and the printing control section ended printing, and] as the feature.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the printing control method and printing control system which can perform a re-printing request easily about arbitrary pages, when printing is requested through communication lines, such as LAN (Local Area Network).

[0002]

[Description of the Prior Art] Between the terminal units mutually connected through a communication line like LAN, a certain terminal unit may request printing of a file etc. to other terminal units. In such a case, a request terminal transmits the data for printing to a printing control terminal. A printing control terminal stores the received data for printing in the spool file of a general-purpose operation system. Then, a printing control terminal outputs in order the data stored in the spool file to a printer, and performs printing control.

[0003]

[Problem(s) to be Solved by the Invention] By the way, there were the following technical problems which should be solved in the above printing control methods conventionally. After the printing control terminal which received the printing request sends out data required for a printer and ending printing, it eliminates the data stored in the spool file. Therefore, when a certain obstacle occurs during printing and all printings of a file are not completed, all data must be re-received anew and printing must be redone.

[0004] Moreover, when printing is completed normally, the print data in a spool file are eliminated immediately. When some output forms with which the user was printed are lost on the other hand or the part where printing concentration is inadequate is discovered in part, he may wish to print again about the portion. Also in this case, the data of the page which corresponds from a request terminal must be resent, and printing must be redone.

[0005] However, the procedure for the above re-printings is the same as the procedure which performs a printing request at the beginning, and needed various kinds of procedure which transmits the data for printing or specifies the page for printing, and the problem of it not only becoming a big burden, but having made the occupancy time of a communication line increasing in vain, and barring effective use of resources for an official in charge was.

[0006]

[Means for Solving the Problem] this invention adopts the next composition in order to solve the above point. The method of this invention extracts the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, when a printing control terminal performs printing processing using the data for printing received from the request terminal. Furthermore, it is characterized by printing the page to which the data which saved page information with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond.

[0007] Moreover, the equipment of this invention searches a newpage position from the data for printing with the spool file which stores the received data for printing in the printing control terminal which receives a printing request, and is equipped with the spooler which generates the page information which shows the printing starting position of each page. Furthermore, it is characterized by having the printing processing section which prints the page to which the data saved with reference to page information according to the re-printing demand which specified the page after printing processing to be the permanent file which saves the data and the page information for printing after the printing processing end correspond.

[0008]

[Function] If the data for printing are received by the printing control terminal, reference of a newpage position will be first performed by the spooler. Printing data are stored in the data file of a spool file, and the page information which shows the printing starting position of each page is stored in a page management file. Referring to this spool file, the printing processing section controls a printer and performs printing. After a printing end is posted to a permanent file, and the content of this spool file is saved. If there is a re-printing request which specified the page, with reference to a page management file, the printing data which correspond from a data file will be read. It becomes unnecessary therefore, to send again the data for printing of the page which corresponds from a request terminal.

[0009]

[Example] Hereafter, this invention is explained in detail using the example of drawing. Drawing 1 is the block diagram showing the printing control-system example of this invention. In this system, the request terminal 10 is

connected with the printing control terminal 20 through the communication lines 1, such as LAN. In addition, in addition to this, many terminal units shall be connected to this communication line 1. Moreover, what has a printer among these terminal units functions as a printing control terminal as shown in this drawing. Therefore, the printing control terminal 20 may be a terminal only for printings, or may be a terminal which operates like the usual terminal and has a printing function further.

[0010] The re-printing utility 11, the request application 12, the page boundary reference processing section 13, and the general-purpose operation system 14 are formed in the request terminal 10. Moreover, a utility 21, the printing processing section 22, a spooler 23, the storage section 24, and the general-purpose operation system 29 are formed in the printing control terminal 20. The printing processing section 22 is a portion which controls the printer 3 connected to the printing control terminal 20. The spool file 25 and the permanent file 30 are stored in the storage section 24. The spool file 25 has the whole management file 26, the page management file 27, and the data file 28. The permanent file 30 has the whole management file 31, the page management file 32, and the data file 33.

[0011] Each block formed in the above-mentioned request terminal 10 and the printing control terminal 20 consists of a control program which has the fixed function explained later, respectively, and a circuit. The request application 12 of the request terminal 10 consists of application programs which draw up a document etc., generate the data for printing and perform a printing request to the printing control terminal 20. The general-purpose operation system 14 consists of operation systems (OS) of the various kinds known well which control operation of the request terminal 10. The page boundary reference processing section 13 is a portion which performs processing which searches the boundary which serves as a newpage from the data for printing, and inserts a page boundary identifier, as explained later using drawing 5. The re-printing utility 11 is a portion which performs processing which turns and outputs the re-printing request which specified the page about arbitrary pages based on the printing result to the printing control terminal 20 after a printing end.

[0012] The utility 21 of the printing control terminal 20 is the portion which manages the fixed function prepared in the printing control terminal 20, and has the function to transmit the re-printing demand by the re-printing utility 11 of the request terminal 10 to the printing processing section 22, in the equipment of this invention. The printing processing section 22 controls a printer 3, and performs printing control. A spooler 23 is a portion which performs processing which receives the data for printing from the page boundary reference processing section 13 of the request terminal 10, searches a page boundary identifier as explains later using drawing 6, and generates a spool file 25. A spool file 25 is a data file used when the printing processing section 22 performs the first printing. The whole management file 26 is a portion which stores the attribute information on the data for printing. The page management file 27 is a portion which stores the page information explained after the data for printing using drawing 3. A data file 28 is a portion which stores the printing data actually sent out towards a printer 3. A permanent file 30 consists of storage regions for copying a spool file 25 as it is just as it is, for example, and saving it during a fixed period. The general-purpose operation system 29 consists of operation systems which control operation of this printing control terminal 20 and which were known well conventionally.

[0013] Composition explanatory drawing of the received data which the printing control terminal 20 receives to drawing 2 is shown. The request application 12 of the request terminal 10 shown in drawing 1 generates the document file which, in addition to this, contains a character code and various kinds of control codes as data for printing. In this case, the page boundary reference processing section 13 detects the boundary used as the newpage contained in this, and inserts a page boundary identifier there. The received data 40 of the printing control terminal 20 shown in this drawing 2 are data generated as a result of such processing. That is, a header 41 is formed in the head portion of data, and the page boundary identifier 43 which shows the printing data 42 and a page boundary after that serves as a content arranged by turns. In the printing control system of the general former, it is collectively stored in a spool file 25 by these received data 40, and in the case of printing, it is outputted as it is and transmitted to a printer.

[0014] Example explanatory drawing of page information is shown in drawing 3. The spooler 23 shown in drawing 1 analyzes the received data 40 as shown in drawing 2, and extracts page information. The content turns into a content which shows from which position of the data for printing each page is started, as shown, for example in this drawing. For example, xx byte eye to the 2nd page [1st] page becomes the information on the content that the 3rd page is from 00 byte eye from **** byte eye.

[0015] If a spooler 23 accepts the received data 40 shown in drawing 2 and such information searches and discovers the page boundary identifier 43, the following printing data will memorize from what byte it is started. This serves as page information and is stored in the page management file 27 shown in drawing 1. The above page information is unnecessary, when a printing request is received first, and printing is performed as it is, then printing is completed. Moreover, after ending printing, by the conventional printing control method of deleting the content of a spool file and extinguishing the received data, it is unnecessary information.

[0016] On the other hand, in the method of this invention, the content of a spool file 25 is stored in the permanent file 30 after the printing end. And when there is a re-printing request which specified the page from the exterior, the data which correspond immediately are read from a permanent file 30, and it sends to a printer 3, and enables it to perform printing processing. For this purpose, page information is beforehand generated so that the data of the corresponding page can be extracted easily, and it stores in the permanent file 30.

[0017] Processing explanatory drawing to a re-printing demand is shown in drawing 4. By the method of this invention, a re-printing processing demand is received in a mode as shown in this drawing. First, the example which carried out the similar copy of the data for printing, and saved them from the spool file 25 to the permanent file 30

at (a) is shown. When printing terminates normally, such preservation is performed, when there is re-printing demand 45, the data of the page which corresponds from a permanent file 30 are read, and printing processing is performed. [0018] Handling when printing is not completed normally is shown in (b). When printing is not completed normally, there are two kinds of methods of dealing with it. First, if printing is not completed normally, the content of a spool file 25 is left as it is, and the purport which printing terminated abnormally is notified to the request terminal 10. In this case, the printing control terminal 20 interrupts a receptionist and printing control of others of a printing request, and waits for directions of the request terminal 10. And if there is a re-printing request of page specification from the request terminal 10, with reference to the page management file 27 of the spool file 25 shown in drawing 1, the data which correspond from a data file 28 will be read, and re-printing processing will be performed.

[0019] It is also possible to store the content of a spool file 25 in the similar permanent file 30 completely like the case where it terminates normally on the other hand when printing terminates abnormally. In this case, the content of a spool file 25 is cleared and it becomes possible to receive and perform other printing processings etc. On the other hand, after abnormal termination, if there is re-printing demand 46, with reference to the page management file 32 stored in the permanent file 30, the data of the page which corresponds from a data file 33 will be taken out, and printing processing will be performed. This serves as the completely same procedure as the re-printing demand after normal termination.

[0020] The data for printing are stored and held at the storage section 24 of the printing control terminal 20, and the corresponding data can be taken out and printed about arbitrary pages according to page information until there is a re-printing request above in any case, after receiving a printing request. Therefore, it is not necessary to a re-printing demand to resend the data for printing from the request terminal 10.

[0021] The above-mentioned operation is concretely explained in order using a flow chart below. Drawing 5 shows the operation flow chart of the page boundary reference processing section 13 shown in drawing 1. First, in Step S1, the data for printing are received from the request application 12. Next, in Step S2, every one line of the data is searched and the boundary used as a newpage is searched. And in Step S3, if it is recognized as it being a newpage, it moves to Step S5 and a page boundary identifier is stored in a newpage position. After that, the candidate for a search is advanced to the following line (Step S6). When there is no boundary used as a newpage, as shown in step S4, it moves to the following line as it is. And in Step S7, processing of Step S2 - Step S6 is repeated until it is judged that it is the last line. After a search is completed to the last line, it moves to Step S8 and the data for printing are transmitted to the spooler 23 of the printing control terminal 20 through the communication lines 1, such as LAN.

[0022] Explanatory drawing of a spooler of operation is shown in drawing 6. First, in Step S1, a spooler 23 receives transfer data from the page boundary reference processing section 13. Next, in Step S2, the attribute of the printing data contained in the data for printing is written in the whole spool file 25 management file 26. And in Step S3, it analyzes printing data of one line at a time. Consequently, in step S4, when a page boundary identifier is detected, in Step S5, page information is written in the page management file 27. The content is as having been shown in drawing 3. Then, it progresses to the following line in Step S6, and processing of Step S3 - Step S6 is repeated until it is judged that it is the last line in Step S7. In this way, if all the page boundary identifiers contained in the data for printing are detected and required page information is stored in the page management file 27, it moves to Step S8 and the whole printing data is stored in a data file 28.

[0023] The printing processing flow chart in usual is shown in drawing 7. The printing control section 22 of the printing control terminal 20 performs printing processing according to a procedure as shown in this drawing. First, in Step S1, the attribute of printing data is read from a whole management file. And according to the content, data are read from the data file 28 of a spool file 25, and it outputs towards a printer 3. Then, in Step S3, it judges whether it is unusual whether a printing result is normal. Here, when a printing result is judged to be normal, it moves to step S4, and a spool file is saved at a permanent file 30. And in Step S6, the purport which printing terminated normally to the request terminal 10 is notified via a communication line 1. The request application 12 recognizes a printing end in response to this notice.

[0024] The purport which moved to Step S5 when a printing result was judged to be unusual, and was terminated abnormally in Step S3 on the other hand is notified to the request application 12. In addition, only when it terminates normally, it is made to save the content of a spool file 25 shown in drawing 1 like this flow chart in this example at a permanent file 30. This is for waiting for the re-printing request of the request application 12 etc., where the data for printing are held to a spool file 25, when it terminates abnormally.

[0025] The printing processing operation flow chart at the time of obstacle generating is shown in drawing 8. When an obstacle occurs, the printing processing section 22 performs printing processing in a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 operates, and printing directions are sent in to the printing processing section 22 via a utility 21. Here, the content of the printing directions is judged in Step S2. When there are directions of the purport which stops printing, it moves to Step S3, and the content of a spool file 25 is deleted as it is, it moves to Step S10, and control is returned to a utility. And in Step S2, if the content of printing directions shows re-printing from a specification page, it will move to Step S5 and the page information on the resumption specification page of re-printing will be taken out from the page management file 27 of a spool file 25. And the printing data of the page which corresponds according to the page information are read from a data file 28. Then, the data is outputted to a printer (Step S7), and printing is performed.

[0026] Moreover, in Step S2, when directions of the purport re-printed from a head are received, all printing data

are unconditionally read from a data file 28 (Step S4). This printing data also progresses to Step S7, and is outputted to a printer. Then, in Step S8, when it is judged whether printing was completed normally and it ends normally, the contents of a spool file 25 are stored in a permanent file 30 like Step S4 of drawing 7 (Step S9). And it moves to Step S10 and control is returned to a utility.

[0027] Drawing 9 shows the permanent-file re-printing processing operation flow chart after normal termination. When received printing is completed normally seemingly, re-printing control is performed according to a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 performs printing request directions through the utility 21 of the printing control terminal 20. In this case, it moves from Step S1 to Step S2, and the contents of request directions are judged. If the contents of request directions are re-printing from a specification page, it will move to Step S3 and the page information on the resumption specification page of re-printing will be read from the page management file 32 of a permanent file 30. And it moves to Step S4, the printing data which correspond from the data file 33 of a permanent file 30 are read, and it outputs to a printer 3 in Step S6. After that, in Step S7, control is returned to a utility.

[0028] The re-printing request operation flow chart by the utility at the time of obstacle generating is shown in drawing 10. In the re-printing utility 11 side, request operation as shown in this drawing is performed. That is, in Step S1, directions of whether after obstacle generating stops the printing processing, or specifies a page, and requests re-printing or to perform re-printing anew from a head are chosen, and a request is outputted. The request is sent to the printing control terminal 20, and processing returns from the printing control terminal 20 according to the procedure already explained that printing processing is completed (Step S2). Here, in Step S3, it is judged whether it is normal, if not normal, it will be judged in Step S4 whether a re-printing request is performed again, and in carrying out a re-printing request, it returns to Step S1. Moreover, in stopping printing, it moves to Step S5, and a printing processing stop is requested from the printing control terminal 20.

[0029] The operation flow chart of the utility in the case of the permanent-file re-printing request after normal termination is shown in drawing 11. If there is a printing poor portion after normal termination, directions of whether the re-printing utility 11 performs re-printing of page specification to the printing control terminal 20 or to perform re-printing from a head will be chosen, and a directions request will be issued. And in Step S2, if printing control of the printing control terminal 20 is completed and control returns, in Step S3, it will judge whether processing was completed normally. In performing a retry, it returns from Step S4 to Step S1 completely like what was shown in drawing 10. Moreover, when a retry is unnecessary, it progresses to Step S5, and the stop of printing is requested. If it has ended normally, operation of a utility will be ended as it is.

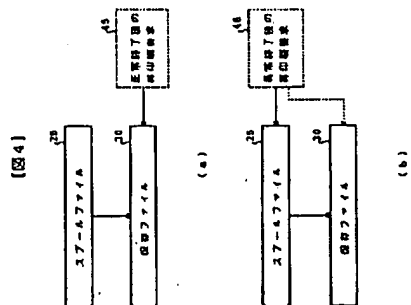
[0030] The printing control method of this invention is not limited to the above example. As long as it seems that the contents of printed information can extract the data of the corresponding page when there is a re-printing request from the data for printing substantially, they may be the things of what form and the contents. Moreover, as explained previously, even if the re-printing demand after abnormal termination refers to a spool file, once it does not interfere even if it enables it to refer to a permanent file and it stores it in a permanent file altogether, a spool file has the advantage that it can be freely used for a new printing demand etc.

[0031] Moreover, it is necessary to save no data for printing as they are at a permanent file. That is, it is desirable to prepare a utility which eliminates in order data without a possibility that a re-printing request may already occur to suitable timing.

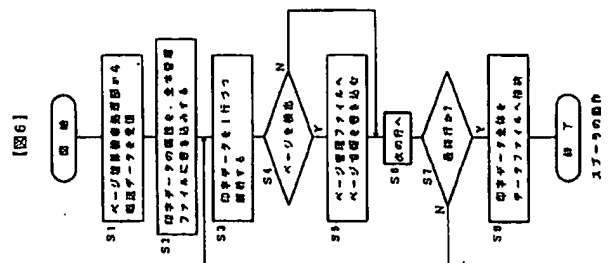
[0032]

[Effect of the Invention] According to the printing control method and printing control system of this invention which were explained above When a printing control terminal performs printing processing using the data for printing received at the request terminal, a newpage position is searched from the data for printing. When there is a re-printing demand which extracted the page information which shows the printing starting position of each page, saved with the data for printing after the printing processing end, and specified the page. Since the page to which the saved data correspond was printed with reference to page information, it becomes unnecessary to send the data for printing again to a printing control terminal. Therefore, request application is again started for re-printing, the procedure of performing a printing request is skipped, and re-printing is attained only by taking out the printing request which specified the page from a utility. For this reason, time to transmit the warm-up time of request application and the data for printing etc. can be saved, and the processing time for re-printing is shortened. Moreover, there is an effect which mitigates the traffic of the communication line which connects a request terminal and a printing control terminal.

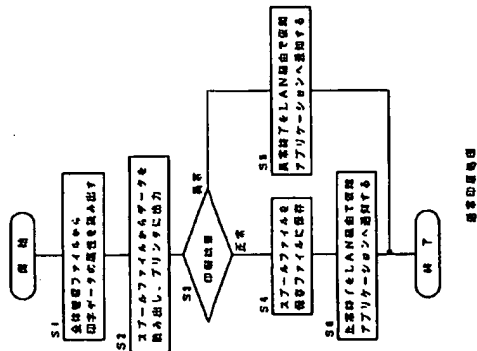
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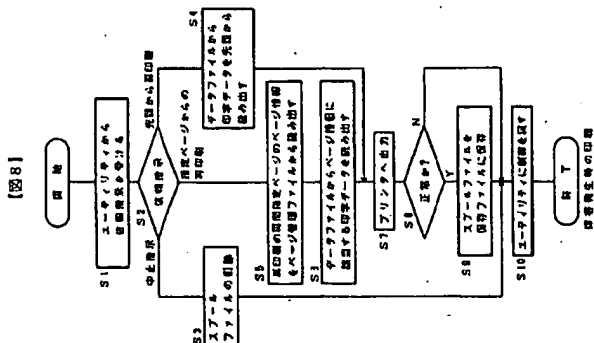
四、江蘇鹽務之利弊



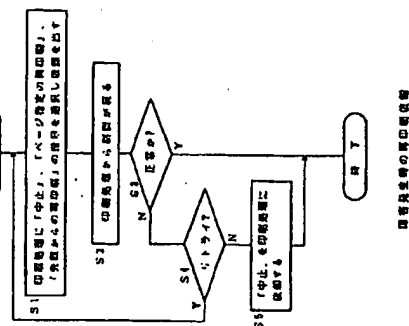
【图7】



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[10]



【圖 11】

